Phonological interference in the ESP context: an analysis of Uzbek medical students' pronunciation challenges

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ARTICLE INFO	ABSTRACT
	This article investigates the phonological challenges faced by Uzbek medical students in learning English, with a focus on pronunciation, stress, and intonation. Taking classroom observations, the study identifies common errors, such as mispronunciations of medical terminology and common general words, confusion over vowel and diphthong sounds, incorrect stress placement, and difficulty with intonation and connected speech. These issues often come from L1 (Uzbek) interference and a lack of systematic phonological training. The study highlights the importance of integrating explicit pronunciation instruction into English for Specific Purposes (ESP), particularly in medical contexts, where clear and accurate communication is critical. The research also reviews prior studies and teaching strategies to propose effective approaches for improving medical students' phonological competence. The findings emphasize the need for targeted, context-sensitive phonological training to foster more confident and accurate English use among medical professionals.

ESP kontekstida fonologik interferensiya: oʻzbek tibbiyot talabalarining talaffuz muammolari tahlili

	ANNOTATSIYA
	Ushbu maqolada ingliz tilini oʻrganish jarayonida oʻzbek tibbiyot talabalari duch kelayotgan fonologik qiyinchiliklar – talaffuz, urgʻu va intonatsiya masalalari tahlil qilinadi. Oʻquv jarayonini kuzatish asosida tibbiy terminlar va umumiy soʻzlarning notoʻgʻri talaffuzi, unli tovushlar va diftonglarning

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aytilmas tovushlar,
intonatsiya.

aralashib ketishi, urg'uning noto'g'ri qo'yilishi, shuningdek, intonatsiya va so'zlashuvdagi nutq bilan bog'liq muammolar aniqlangan. Ushbu xatoliklar, odatda, ona tilining (o'zbek tilining) ta'siri hamda fonologik jihatdan tizimli ta'limning yetishmasligi bilan izohlanadi. Tadqiqot natijalari ingliz tilini kasbiy maqsadlarda o'qitish (ESP) kurslariga aniq yo'naltirilgan talaffuz mashg'ulotlarini kiritish zarurligini ko'rsatadi, ayniqsa, tibbiy sohada aniq va tushunarli muloqot muhim ahamiyatga ega. Ilgari olib borilgan ilmiy ishlar va o'qitish metodlari tahlil qilinib, tibbiyot talabalari fonologik kompetensiyasini rivojlantirishga xizmat qiluvchi samarali yondashuvlar taklif etilgan. Tadqiqot xulosalari shuni ko'rsatadiki, kontekstga moslashtirilgan va aniq mo'ljallangan fonologik ta'lim tibbiyot sohasi vakillarining ingliz tilida ishonchli va aniq so'zlashuv malakasini oshirishda muhim omildir.

Фонологическая интерференция в контексте ESP: анализ проблем произношения у узбекских студентов-медиков

АННОТАЦИЯ

В статье рассматриваются фонологические трудности, с которыми сталкиваются узбекские студенты-медики при изучении английского языка, – делается акцент на произношение, ударение и интонацию. На основе наблюдений за учебным процессом выявлены типичные ошибки: неправильное произношение медицинских терминов и общеупотребительных слов, смешение гласных и дифтонгов, некорректная расстановка ударений, а также затруднения с интонацией и связной речью. Эти проблемы, как правило, обусловлены влиянием родного (узбекского) языка и отсутствием систематического фонологического обучения. В исследовании подчёркивается необходимость включения целенаправленного обучения произношению в курсы английского языка для специальных целей (ESP), особенно в медицинской сфере, где точность и ясность речи играют решающую роль. Проанализированы предыдущие исследования и методики преподавания, чтобы предложить эффективные подходы к развитию фонологической компетенции студентов. Полученные результаты подчёркивают важность контекстуализированного обучения, направленного на повышение уверенности и точности в использовании английского языка будущими медицинскими специалистами.

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INTRODUCTION

This observational research was designed to investigate the phonological challenges that Uzbek medical students face in learning English, with a particular focus on pronunciation, word stress, and intonation. The study emerged from the growing recognition that accurate pronunciation in medical English is essential, not only for academic success but also for ensuring effective communication in clinical settings. To explore this issue in depth, the research was guided by the following key questions:

• What is the overall performance of students in learning English?

• What common phonological challenges do students face while learning English?

• What are the differences between medical students and general EFL students regarding pronunciation?

• How can the pronunciation skills of medical students be improved effectively?

These questions were examined through real-time classroom observations of second-year students in a medical college in Uzbekistan. The observations provided direct insights into learners' performance and helped identify recurring patterns of phonological interference, particularly those influenced by the students' native language (Uzbek). The study's aim is to propose practical, research-informed solutions to address the phonological needs of future healthcare professionals.

LITERATURE REVIEW

One of the important aspects that should be investigated to facilitate the learning process is teaching medical foreign words and pronouncing them correctly. However, mastering correct pronunciation is often considered less significant. At times, the process can seem both boring and difficult.

To ensure effective communication, accurate and appropriate pronunciation of each word is essential. Mispronouncing sounds can lead to misinterpreting messages. Therefore, pronunciation instruction must be integrated into the classroom alongside other language components and skills to support successful language learning [1]. Over the past few decades, significant research has been conducted on teaching pronunciation, especially regarding textbook content, teachers' pedagogical understanding, and classroom practices, such as Derwing et al., 2012; Foote et al., 2016; Couper, 2017; and Nguyen and Newton, 2020. Instructor-researchers like Jabbour-Lagocki, J., who focus on improving medical English learning processes and teaching methods, note that some stress rules in medical terminology are similar to those in multisyllabic general English words. Specifically, stress often falls on either the penultimate (next-to-last) syllable or the antepenultimate (third-from-last) syllable. She classified English medical terms into five groups based on stress locations and syllable patterns to aid stress placement [2]. Other researchers in Spain, Cerezo, R., Calderón, V., & Romero, C., suggested using mobile applications to help students acquire correct pronunciation of medical terms. Arturito (a mobile app) was selected for their studies and offers four main functions: not only assisting with pronunciation but also helping to review vocabulary [3]. The study by Baeyens (2018) examined how phonological instruction and 'noticing' techniques impact Spanish students learning English for medical purposes. In this empirical research, intermediate-level Spanish students recorded themselves pronouncing a text before and after a pronunciation practice session. Initially, the students read the text aloud without interruption, then participated in a session where explanations were provided, and targeted pronunciation exercises were performed. The analysis of the recordings showed significant differences between the initial and later readings, demonstrating notable

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progress in the students' pronunciation [4]. Studies on speech perception training have shown that adult second language learners can learn to distinguish non-native consonant contrasts through laboratory training. However, research on perception training for non-native vowels remains limited, with previous vowel studies not training more than five vowels. In a study in Japan, the effect of training set sizes was examined by training native Japanese listeners to identify American English (AE) vowels. Twelve Japanese learners of English were trained for nine days either on the full set of nine AE monophthongs or on the three most difficult vowels. Five listeners served as controls and received no training. Performance was assessed before, immediately after, and three months after training. Results showed that (a) training on all nine vowels improved average identification by 25%, (b) both training groups generalized improvements to untrained words and speakers, and (c) both groups maintained progress after three months. However, the subset group never improved on untrained vowels. We can conclude that training for learning non-native vowels should involve the full set and not focus solely on the more difficult vowels [5].

RESEARCH METHODOLOGY

The limited research on pronunciation instruction in the context of local Medical English has prompted the author to explore effective approaches and practices by reviewing previous studies and examining relevant materials. This section outlines the research design and methodology employed in this study.

The study is based on a qualitative analysis of classroom observations conducted over the course of one week. During this period, seven English lessons were observed across five groups of second-year medical college students. The college, named after Abu Ali Ibn Sina, is located in the Kashkadarya region. The observed students were mostly at beginner to intermediate proficiency levels. Throughout the lessons, students' pronunciation performance was carefully monitored, and common phonological errors were systematically recorded for analysis.

RESULT

This section presents the key findings from classroom observations focused on phonological performance among second-year medical college students learning English. The analysis concentrated on identifying recurring pronunciation errors and common patterns of phonological interference. Several categories of difficulties emerged, particularly influenced by learners' first language (Uzbek) and the absence of structured pronunciation instruction. The most frequent and frequent pronunciation issues are outlined below.

1. Mispronunciation of Medical Terms: one of the recurring speech issues is inappropriate pronunciation of medical terms, in particular.

/hɪpər.../ or /haɪpər.../?

For example, the majority of students repeatedly pronounced the term "**hypertension**" as /ˌhɪpə'tenʃən/ instead of the correct /ˌhaɪpər'tenʃən/, "**hypertony**" as /ˈhɪpərˌtɒni/ instead of /ˈhaɪpərˌtɒni/, and "**hypotony**" as /ˈhɪpətəni/ not /ˈhaɪ.pə.tə.ni/. The mispronunciation of these words comes from L1 sound interference, as these words are pronounced exactly the same in Uzbek, like *gipentoniya and gipotoniya.* This mistake during the initial stages of learning a foreign language may appear to be not so serious, but it can quickly lead to fossilization if ignored, meaning it will be much more difficult to correct as time goes on. Mispronunciation of terms in clinical communication, where accurate pronunciation is important, can cause confusion and misunderstandings.

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Double <u>oo</u> as always /u/?

Another common mispronunciation involved words containing the double "oo" which learners often articulate inaccurately due to fossilized errors formed during their early schooling. To clarify further, this is primarily because, in most public schools, students were taught to always pronounce the double "oo" /u/ sound like in words like "*good*," "*afternoon*," and "*goodbye*" without considering exceptions.

"blood" /blʌd/ → pronounced as /bluːd/

"door"/dɔːr/ → pronounced as /duːr/.

Difficulty with vowels

the /æ/ sound:

The English short vowel /æ/ (as in "cat") does not exist in Uzbek, leading students to pronounce it as /e/ or /a/, resulting in mispronunciations like "ket" instead of "cat." Here are some examples in our notes that were mispronounced while observing the lesson.

Observed mispronunciation examples

table 1

Word	Mispronunciation observed	IPA
Hand	hend	/hænd/
Vaccine	veksin	/ˈvæksiːn/
Cancer	kensr	/ˈkænsər/
Scalp	skelp	/skælp/
Rash	resh	/ræʃ/
Fracture	frekchr	/ˈfræktʃər/
Transplant	transplant	/ˈtrænsplænt/

Challenges with the /ɪə/ diphthong:

The diphthong /ɪə/ (as in "ear") does not exist in Uzbek, leading to mispronunciations where students use a single vowel sound instead.

phobia /ˈfoʊbja/, not /ˈfəʊb**ɪə**/ or /ˈfəʊb**ɪə**/

media /ˈmiːdja/, not /ˈmiːd**ɪə**/

criteria /kraɪˈtɪra/, not /kraɪˈt**ɪə**r**ɪə**/

superior /suːˈpɪrə/, not /suːˈp**ɪə**r**ɪə**/

posterior /pɒˈstɪrə/, not /pɒˈst**ɪə**r**ɪə**/

Influence of L1

These words in our notes were observed to be pronounced in a way that closely resembles their written form and pronunciation in Uzbek.

diagnosis – pronounced as /ˌdɪagˈnoʊsɪs/, not /ˌdaɪəgˈnoʊsɪs/.

patient – pronounced as /ˈpatient/, not /ˈpeɪʃənt/.

antibiotic – pronounced as /antɪbɪˈotɪk/, not /ˌæntɪbaɪˈɒtɪk/.

virus – pronounced as /virus/, not /ˈvaɪrəs/.

Silent Letters

Many students were recorded pronouncing words like "**psychology**" as /psikologi/ not /saɪˈkɒlədʒi/ and "**pneumonia**" as /pneumonia/ not /njuːˈməʊnɪə/ with a pronounced "p." This mispronunciation also can be attributed to L1 sound interference. Since these words are also existent in Uzbek and are commonly heard and used with the

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"p" sound, students initially tend to pronounce them according to the Uzbek version, transferring the familiar pattern into their English pronunciation. It was the same case with "**psychiatry**", being pronounced /sɪˈkɪatri/, not /saɪˈkaɪətri/.

"th" sounds

Challenge: The "th" sounds (/θ/ as in "*think*" and /ð/ as in "*this*") pose a significant challenge for Uzbek speakers, as these sounds do not exist in the Uzbek language. As a result, students often pronounced these terms starting with a "t." **/tɛˈrɒmɪtə/**. Additionally, students might think it is pronounced the same in Uzbek: "**termometor**." Also, students kept saying **/trɒmˈbəʊsɪs/,** substituting /θ/ with /t/. The case was similar to the word "**therapy**", being pronounced /terapi/, not /ˈθɛrəpi/.

Schwa

The schwa sound /ə/ posed a challenge for many medical students learning English. Since the schwa is a reduced vowel occurring in unstressed syllables, Uzbek learners with more regular stress patterns, often found it difficult to recognize and produce correctly. Here are some example words which students had challenges with correct pronunciation.

As this sound doesn't exist in Uzbek, learners tend to replace it with other vowel sounds, such as /ɛ/, /ʊ/, /o/, /a/ or /ɪ/, or over-pronounce it.

Mispronunciation of schwa area

table 2

Word	IPA	Mispronunciation of schwa area
doctor	/ˈdɒktər/	/ˈdɒktor/
symptom	/ˈsɪmptəm/	/ˈsɪmptom/
bacteria	/bækˈtɪəriə/	/bekˈtɪra/
clinical	/ˈklɪnɪkəl/	/ˈklɪnɪkel/
anatomy	/əˈnætəmi/	/eˈnetomi/
condition	/kənˈdɪʃən/	/kendɪʃɛŋ/
nervous	/ˈnɜːvəs/	/ˈnerːves/
radiology	/ˌreɪdɪˈɒlədʒi/	/ˌreɪdɪˈoliʒi/

Problem with understanding and applying connected speech
Reduction of Function Words

In English, function words (e.g., "and", "to", "for") are often reduced in casual speech. As expected, like Uzbek general English learners, medical students pronounced these words fully, sounding a more formal and less natural speech pattern.

2. Challenge with stress placement:

How was the Intonation?

The majority of the beginner-level students had the same monotone intonation, speaking all types of sentences with a flat tone. This may affect the clarity of a speech and the emotions of a patient when communicating. For example, when the teachers told them to have a short role play, a student, in the role of a doctor, sounded very unconfident, *"You are going to be fine,"* indifferent, or robotic, rather than reassuring.

DISCUSSION AND SUGGESTIONS

The phonological difficulties observed among Uzbek medical students highlight the substantial impact of first language (L1) interference and the absence of systematic pronunciation instruction in the ESP curriculum. Most notably, learners demonstrated

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challenges with English vowel and diphthong distinctions, stress placement in polysyllabic words, and the natural use of intonation and connected speech. These findings are consistent with prior studies (e.g., Jabbour-Lagocki, 1992; Baeyens, 2018), which emphasize the complexity of pronunciation acquisition, particularly in specialized registers such as medical English.

One of the critical interpretations from our classroom data is that students often rely on Uzbek phonological rules to pronounce English words, especially those that are medically technical but resemble their Uzbek equivalents. This leads to transfer errors, fossilization of inaccurate patterns, and potential miscommunication in professional contexts. To address these issues, we suggest the following pedagogical interventions:

Explicit phonological instruction should be integrated into ESP syllabi, focusing not only on general English sounds but also on medical terminology-specific patterns. This can include targeted practice with medical words that have silent letters, schwa sounds, and stress rules. Furthermore, Contrastive analysis activities can help students become aware of the differences between English and Uzbek pronunciation systems. For instance, side-by-side comparison of similar-sounding words in both languages can promote phonological awareness. Moreover, the Use of pronunciation technology (e.g., mobile apps like Arturito, pronunciation software, IPA transcription tools) should be encouraged for self-practice, especially for recognizing minimal pairs and stress patterns.

Pronunciation drills and role-playing in simulated clinical interactions can reinforce correct stress, rhythm, and intonation in context. For example, mock doctor-patient dialogues help students practice both medical vocabulary and the pragmatic aspects of speech. Training in connected speech and intonation patterns, such as reductions, linking, and sentence stress, should be provided to enhance students' fluency and listener comprehensibility. From a broader perspective, these findings underscore the need to reconsider how pronunciation is treated within ESP courses. It is often overlooked, yet in fields like medicine, pronunciation is crucial for safety, accuracy, and patient trust. For instance, mispronouncing terms such as "hypertony" or "hypotony" could lead to serious misunderstandings in real clinical situations.

Limitations of the Study:

This study was conducted over a short duration with a limited sample size in one college, and thus, the findings may not fully represent all medical students in Uzbekistan. Moreover, we focused solely on classroom observations without pre-/post-test data or student interviews, which could have added richer insights.

Suggestions for Future Research:

Future studies might explore the effectiveness of specific pronunciation teaching interventions in ESP contexts through experimental designs. In addition, longitudinal studies could examine how early pronunciation training impacts medical students' communicative competence over time.

By implementing these recommendations and developing a pronunciation-focused component in ESP curricula, especially for future healthcare professionals, educators can help bridge the gap between linguistic theory and communicative practice, ultimately fostering more confident, intelligible, and patient-oriented medical professionals.

CONCLUSION

This study highlights the need for explicit phonological instruction in ESP courses for medical students. Common issues – such as mispronunciation, misplaced stress, and flat intonation – often stem from native language interference and insufficient

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pronunciation training. In medical settings, where clarity is vital, such errors can hinder effective communication. Integrating focused, context-aware phonological practice into ESP curricula can significantly enhance students' confidence, accuracy, and communicative competence in professional environments.

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